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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,091	06/05/2007	Uwe Schierhorn	06-479	5492

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EXAMINER	
KOAGEL, JONATHAN BRYAN	
ART UNIT	PAPER NUMBER
3744	
MAIL DATE	DELIVERY MODE
12/08/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/589,091	SCHIERHORN, UWE	
	Examiner	Art Unit	
	JONATHAN KOAGEL	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 July 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 19 is objected to because of the following informalities: The recitation “and during the defrosting phase” (claim 19 line 4) should be changed to --during a defrosting phase-- for clarity and proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation "modified expansion valve" is unclear in context when given the definition "realization of a fluid connection" as defined in the specification on page 2 line 2. Examiner as best understood interprets this definition to be in fluid communication with a refrigerant line.

The recitation “modified linear compressor” is unclear in context with given the definition “realization of a fluid connection” as defined in the specification on page 2 lines 2-6. This limitation, as best understood, has been interpreted as being in fluid communication with a refrigerant line.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ueno et al. US Patent No. 6,131,401.

Regarding claim 14, Ueno teaches in fig. 1, a refrigeration installation having at least one refrigeration consumer 10, 20 which includes at least one evaporator 16, 26, having at least one feed line (See annotated figure below) and at least one discharge line (See annotated figure below), via which a refrigerant is fed to the at least one refrigeration consumer 10, 20 and discharged from the at least one refrigeration consumer 10, 20, the at least one refrigeration consumer 10, 20 having expansion members 15, 25 wherein, the expansion members 15, 25 being designed as modified expansion valves, each refrigeration consumer 10, 20 being assigned a modified linear compressor 14, 24, the modified linear compressor 14, 24 having a working position which allows flow to pass through without a significant pressure drop. The compressor has a working position without a significant pressure drop because the compressor compresses a refrigerant to a higher pressure, and therefore there is no pressure drop, rather an increase in pressure.

Regarding claim 15, Ueno teaches in fig. 1, wherein the at least one refrigeration consumer 10, 20 has a dedicated closed refrigerant cycle 12, 22, the refrigerant cycle 12, 22 being operatively connected via at least one liquefier 13, 23 to the at least one feed line and the at least one discharge line, the refrigerant cycle 12, 22 in each case having modified expansion valves 15, 25 and modified linear compressors 14, 24, and the evaporator 16, 26 of said at least one refrigeration consumer 10, 20 in each case being arranged higher than the liquefier 13, 23 of the said at least one refrigeration consumer 10, 20 (column 4 lines 1-11, column 5 line 13-column 6 line 57). From a horizontal reference point of view in fig. 1 where a left direction is defined as a lower point and a right direction is defined as a higher point, the evaporator is arranged higher than the liquefier.

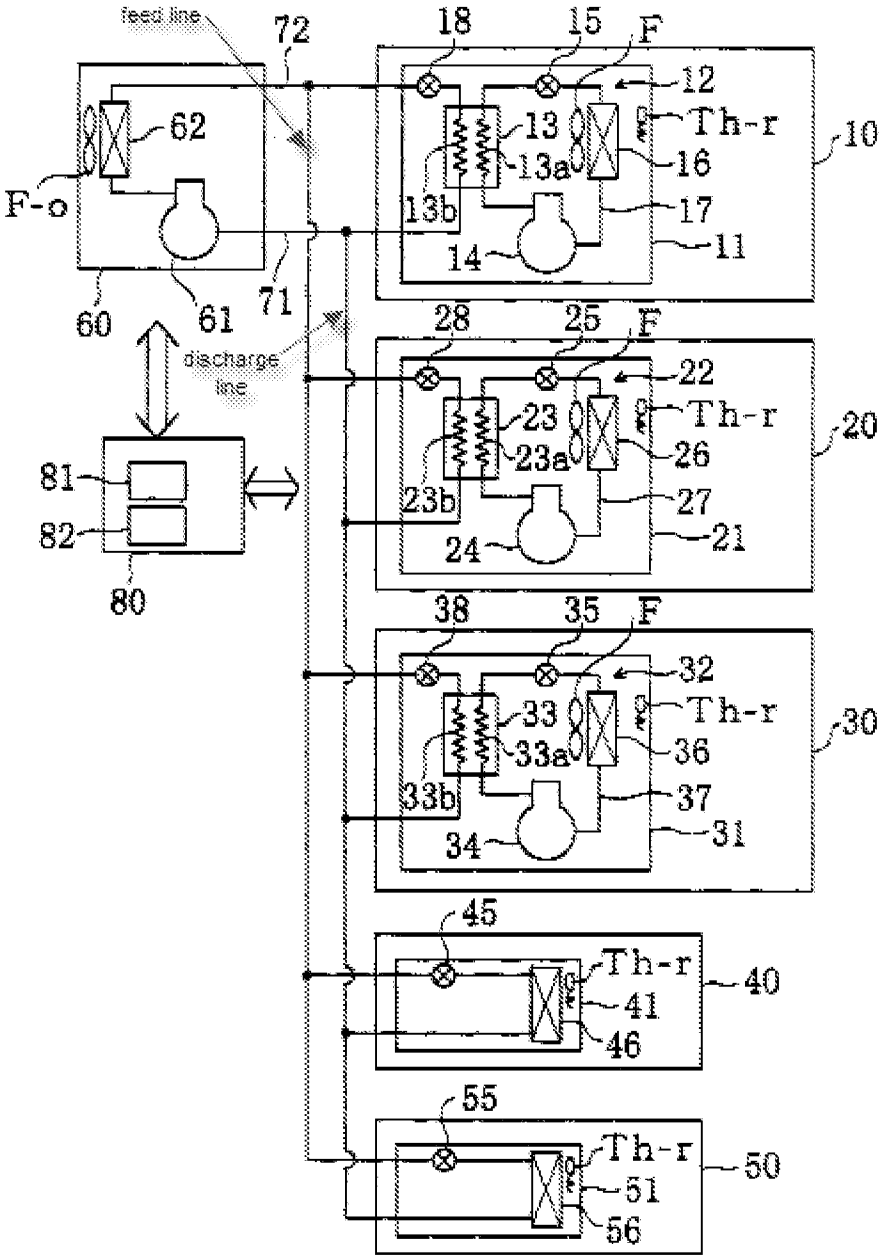
feed line
72
18
15
F
12
62
13
Th-r
10
13a
16
F-o
13b
17
14
11
60
61
71
28
25
F
discharge line
22
23
Th-r
20
23a
26
81
23b
27
82
24
21
80
38
35
F
32
33
Th-r
30
33a
36
33b
37
34
31
45
Th-r
40
41
46
55
Th-r
50
51
56

Fig. 1

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno as applied to claim 14 above, and further in view of Fixemer US Patent No. 5,752,726.

Regarding claim 16, Ueno teaches the invention as disclosed and further teaches in fig. 1, wherein a plurality of refrigeration consumers 10, 20 are connected to the at least one feed line and the at least one discharge line. Ueno fails to explicitly teach the connection is by means of couplings.

However, Fixemer teaches in fig. 1 a quick-action coupling for a refrigerant line (column 1 lines 4-10) that is particularly useful to establish a fluid-tight connection.

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the teachings of Ueno with the teachings of Fixemer to include a coupling in order to insure a proper seal between the feed/discharge lines and the refrigeration consumer, so refrigerant does not leak which would cause the compressor to become damaged from a lack of refrigerant.

Regarding claim 17, Ueno as modified above teaches the invention as disclosed and Fixemer further teaches in fig. 1, wherein said couplings are quick fit couplings (column 1 lines 4-10).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno as applied to claim 14 above, and further in view of Sakamoto et al. JP Publication No. 2003-065616.

Regarding claim 18, Ueno teaches the invention as disclosed but fails to explicitly teach a supercooler as an internal heat exchanger within the refrigeration consumer.

However, Sakamoto teaches in fig. 9, a supercooler (heat exchanger 49) that serves to supercool the refrigerant that flows from the condenser (pg. 8 paragraph 42).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify of Ueno with the teachings of Sakamoto to include a supercooler in order to obtain a very low temperature refrigerant for the purposes of supplying the evaporator of the system with this low temperature refrigerant, which allows the evaporator to be used in a cooling space with a high cooling demand. Ueno as modified by Sakamoto fails to explicitly teach more than one supercooler. However, it would have been obvious to a person of ordinary skill in the art at the time of invention to include supercoolers in the at least one refrigeration consumer, since it has been held that mere duplication of essential working parts of a device involve only routine skill in the art. *In re Regis Paper Co. v. Bemis Co.,* 193 USPQ 8. The use of more than one supercooler will allow the refrigerant to obtain a very low temperature, resulting in more

efficient cooling in a cooling space, as the refrigeration system will not have to operate as long to meet a cooling demand.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno as applied to claim 14 above, and further in view of McCarty US Patent No. 4,285,210.

Regarding claim 19, Ueno teaches the invention as disclosed and further teaches in fig. 1, a method for operating a refrigeration installation comprising assigning at least one refrigeration consumer 10,20 modified expansion valves 15, 25 and modified linear compressors 14, 24. Ueno fails to explicitly teach during a defrosting phase of at least one of the refrigeration consumers moving at least one of the modified expansion valves and at least one of the modified linear compressors of the refrigeration consumers which are to be defrosted into a working position in which through flow without a significant pressure drop is possible.

However, McCarty teaches in fig. 3, during a defrosting phase of a refrigeration consumer 12, the refrigeration consumer moving at least one of a modified expansion valve 27 and at least one of a modified linear compressor 36 of the refrigeration consumer 12 which are to be defrosted into a working position in which through flow without a significant pressure drop is possible. The expansion member 27 is considered to be a modified expansion valve because it is in fluid communication with the refrigerant system. It moves into a working position during defrost (where refrigerant is bypassed around the expansion valve via valve 37) which allows the pressure of the refrigerant in the system not to have a significant pressure drop because

some of the refrigerant is being bypassed around the modified expansion valve. This reduces the overall refrigerant pressure drop of the system. The compressor is considered a modified compressor because it is in fluid communication with the refrigeration system. The modified linear compressor moves into a working position (refrigerant flowing into and out of the compressor) in which a through flow without a significant pressure drop because the compressor increases the pressure of a refrigerant flowing therethrough, and therefore a pressure drop or a pressure decrease does not occur.

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify Ueno with the teachings of McCarty to include a defrosting phase of at least one of the refrigeration consumers moving at least one of the modified expansion valves and at least one of the modified linear compressors of the refrigeration consumers which are to be defrosted into a working position in which through flow without a significant pressure drop is possible in order to allow a warmer and more uniform temperature refrigerant to be utilized for a defrosting operation. When a more uniform temperature refrigerant is discharged to the evaporator, the time for defrost is decreased, lowering the operating costs of the system, as the compressor does not have to operate as long during a defrosting period.

Response to Arguments

Applicant's arguments filed 7/14/09 have been fully considered but they are not persuasive.

In response to the applicant's argument regarding the 112 second paragraph rejection on claims 7-12, the examiner respectfully disagrees. The specification clearly states that the term modified expansion valve and modified compressor means that the expansion valves and linear compressor have the secondary function of "realization of a fluid connection". Nowhere in the specification does this definition state that the expansion valves or linear compressors have a working position which allows flow to pass through without a significant pressure drop thereby allowing the secondary function of realization of a fluid connection. Due to the sole definition of a secondary function of a realization of a fluid connection, the applicant's argument is not persuasive. In addition, the applicant states that in regular devices, there is no fluid connection realized in which a fluid enters and leaves the expansion valve or the compressor without changing its state of aggregation. This specific definition is not disclosed in the specification, and therefore this argument is also not persuasive.

Regarding the applicant's argument regarding the expansion valves as disclosed by Ueno not being disclosed as to be capable of allowing flow to pass through without a significant pressure drop, the examiner respectfully disagrees. Although the expansion valves lower the pressure of the refrigerant passing through, they are capable of allowing flow to pass through without a significant pressure drop as significant is a relative term, with no specifics being disclosed as to how much the pressure drops.

In response to the McCarty reference not disclosing the modified expansion valves, modified linear expansion machines and modified linear compressors, the examiner disagrees. Ueno disclosed the modified expansion valve, as the modified

expansion valve was interpreted to mean an expansion valve to be in fluid communication with a refrigerant line. A modified linear expansion machine was not required by the claim if a modified expansion valve was disclosed. Also a modified compressor was not required by the claim, if a conventional compressor was disclosed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN KOAGEL whose telephone number is (571)270-7396. The examiner can normally be reached on Monday through Friday 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571)272-4834 or Frantz Jules (571)272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. K./
Examiner, Art Unit 3744
19 November 2009

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art Unit 3744